

PATENT COOPERATION TREATY

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PCT

To:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2005/002607

International filing date (day/month/year)
15.08.2005

Priority date (day/month/year)
30.08.2004

International Patent Classification (IPC) or both national classification and IPC
F01N3/32, F02B77/08

Applicant
TOYOTA JIDOSHA KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Nobre, S

Telephone No. +31 70 340-4635



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/002607

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/002607

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-11
	No: Claims	
Inventive step (IS)	Yes: Claims	2-4,6-10
	No: Claims	1, 5, 11
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

- 1 Reference is made to the following document:
D1 : US 2004/011027 A1 (HIROOKA SHIGEMASA ET AL) 22 January 2004 (2004-01-22)

First embodiment

The apparatus claim 1

- 2 Document D1, which is considered to represent the most relevant state of the art, discloses a secondary air supply apparatus from which the subject-matter of independent claim 1 differs in that:

It further comprises an opening/closing air switch valve which opens/closes the first air passage upstream of the vacuum pressure air switch valves.

- 2.1 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT)
The problem to be solved by the present invention may be regarded as:

To provide a secondary air supply apparatus that can accurately detect the failure of one its components, namely one of the vacuum pressure air switch valves.

- 2.2 Nevertheless from the description it is not clear what is the advantage of having an opening/closing air switch valve upstream of the vacuum pressure air switch valves, if it is open during the failure detecting procedure, therefore not influencing the said procedure.

The feature in the last paragraph of claim 1 is considered as being a method step, which is already disclosed in claim 10. Therefore is not taken into consideration for the assessment of the inventive step of claim 1.

Therefore the proposed apparatus in claim 1 of the present application cannot be

considered as involving an inventive step (Article 33(3) PCT).

The method claim 10

- 3 Document D1, which is considered to represent the most relevant state of the art, discloses a method to diagnose the failure in a secondary air supply apparatus from which the subject-matter of independent claim 10 differs in that:

The test is performed while the air pump is stopped.

- 3.1 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT)
The problem to be solved by the present invention may be regarded as to provide a secondary air supply method that can accurately detect the failure of one its components, namely one of the vacuum pressure air switch valves.
- 3.2 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) because testing the secondary air supply system with the air pump is stopped is advantageous at low engine/road noise where the air pump noise would be noticeable.

The second embodiment

The apparatus claims 5 and 11

- 4.1 Document D1, which is considered to represent the most relevant state of the art, discloses a secondary air supply apparatus from which the subject-matter of independent claims 5 and 11 differs in that:

It further comprises an opening/closing air switch valve which opens/closes the first air passage upstream of the vacuum pressure air switch valves.

The subject-matter of claim 1 is therefore novel (Article 33(2) PCT). The problem to be solved by the present invention may be regarded as:

To provide a secondary air supply apparatus that can accurately detect the failure of one its components, namely the air pump or the pressure sensor.

- 4.2 Nevertheless from the description it is not clear what is the advantage of having an closed air switch valve upstream of the vacuum pressure air switch valves which are also closed during the failure detecting procedure.
Therefore it seems that the first air switch valve upstream does not influence the failure detecting procedure.

The feature in the last paragraph of claims 5 and 11 is considered as being a method step. Therefore is not taken into consideration for the assessment of the inventive step of these claims.

Therefore the proposed apparatus in claims 5 and 11 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT).

- 5 Nevertheless the subject-matter of the second embodiment would be allowable when covered only with method claims.

Dependent claims

Dependent claims 2 to 4 and 6 to 9 seem to be defined more by the steps of a method and not defined in terms of apparatus features. Thus, in order to meet the requirements of Article 6 PCT with respect to clarity and conciseness, the category of these claims should be modified.

From the description namely paragraphs [0072], [0072-0078], it is not clear, in claim 2, how a failure of the secondary air supply system can cause an increase of the intake air amount., Article 6 PCT.